MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2016/2017

BFN3304 – FINANCIAL AND VALUATION MODELING

(All sections / Groups)

24 February 2017
3.00 p.m. – 5.00 p.m.
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This question paper consists **FOUR** pages (excluding this cover page).
2. Answer **ALL THREE** questions in **THREE SEPARATE** Excel spreadsheets in **ONE SINGLE** Excel file.
3. Your Excel file should be named with your **STUDENT ID**, followed by your **NAME**, for example: **1111111623_HISHAM.xls**
4. **SAVE** your answers for all questions in the provided **THUMB-DRIVE.**
5. Please also copy your answers together with formulas onto the **HARD COPIES** of Excel spreadsheet **ATTACHED** to this question paper.

QUESTION 1 (30 MARKS)

A Malaysian company considers investing RM3 million in production machinery for a six-year project. Expected cash flows are RM4 million in the first year, the second year, and the third, and RM5 million in the fourth and fifth year. Cost of raw materials is expected to represent 60 per cent of the income from sales, while other costs are expected to be 10 per cent the first year, then 8 per cent of sales. Working capital is RM500000 in the first year, increasing to RM300000 the next year, and staying here for the remaining years. The company uses the "straight-line depreciation" method. At the end of the project (year 6), the machinery can be sold for RM400000. Assume that the book gain from sales is taxed the same year. Also assume that any loss can be netted against other income in the company so that the tax credit from this will occur the same year. Company tax rate is 40 per cent. Apply an after-tax cost of capital of 10 per cent to estimate the net present value of the project. Also estimate the net present value when using the declining balance method with a 30 per cent depreciation rate. Using the following Microsoft Excel template to model the above question.

	A	B	I	J
1	**Input Zone**			
2	Investment		0.50	mark
3	Raw material as % of sale		0.50	mark
4	Other costs as % of sale in the first year		0.50	mark
5	Other costs as % of sale in the following year		0.50	mark
6	Project life		0.50	mark
7	Annual Depreciation%		0.50	mark
8	Working capital increase in Year 1		0.50	mark
9	Working capital increase in Year 2		0.50	mark
10	Salvage value		0.50	mark
11	Interest Rate		0.50	mark
12	Company tax rate		0.50	mark
13				

	A	0	1	2	3	4	5	6	I	J
13										
14	**MODELLING ZONE**									
15										
16	**Cash flows (in $ '000):**									
17	Year	0	1	2	3	4	5	6		
18	Investering								0.5	mark
19	Sales								0.5	mark
20	Raw materials								2.0	mark
21	Other costs								2.0	mark
22	Book value								2.0	mark
23	Depreciation								2.0	mark
24	Taxable profit								2.0	mark
25	Tax on profit								2.0	mark
26	Tac capital gains								0.5	mark
27	Change in working capital								1.0	mark
28	Net Cash Flow								2.0	mark
29	Present Value (k=10%)								2.0	mark
30										
31	Net Present Value (NPV)								3	mark
32									3	mark
33	Internal Rate of Return (IRR)									
34									30.0	Total
35										

Continued...

QUESTION 2 (40 MARKS)

Returns per year have been observed for stocks A and B are listed below (per cent). Using the template below to

Returns	Stocks	
	A	B
2000	15.9 %	1.8 %
2001	-4.0 %	-7.8 %
2002	-1.5 %	4.8 %
2003	4.2 %	9.7 %
2004	3.9 %	-1.4 %
2005	4.4 %	5.9 %
2006	1.9 %	12.1 %
2007	5.9 %	-0.8 %
2008	1.3 %	1.7 %
2009	-2.5 %	2.8 %
2010	0.5 %	-1.1 %
2011	-2.9 %	-0.7 %
2012	-14.9 %	24.7 %
2013	7.1 %	3.8 %
2014	8.7 %	4.0 %
2015	27.8 %	2.1 %

a. Calculate expected return, standard deviation, and covariance for stock A and B. **(15 marks)**

b. Given the share for stock A is 0.5, compute the expected return and standard deviation of the portfolio of stocks A and B. **(10 marks)**

c. Produce a data table which show different portfolios of A and B, when the share for stock A can be 0.0, 0.1, 0.2, …, 1. Illustrate your results graphically. **(10 marks)**

d. Using formulas for a portfolio's expected return and standard deviation to produce different portfolios of A and B, when the share for stock A can be 0, 0.1, 0.2, ..., 1. **(5 marks)**

Continued...

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Returns	Stocks			Portfolio											
2		A	B		Share A:											
3	2000	15.9 %	1.8 %		r_P			5 marks								
4	2001	-4.0 %	-7.8 %		σ_P			5 marks								
5	2002	-1.5 %	4.8 %										Graphical Illustration			
6	2003	4.2 %	9.7 %		Data table	r_P	σ_P		With formulas							
7	2004	3.9 %	-1.4 %		Share A				Share A	r_P	σ_P					
8	2005	4.4 %	5.9 %													
9	2006	1.9 %	12.1 %													
10	2007	5.9 %	-0.8 %													
11	2008	1.3 %	1.7 %													
12	2009	-2.5 %	2.8 %													
13	2010	0.5 %	-1.1 %													
14	2011	-2.9 %	-0.7 %													
15	2012	-14.9 %	24.7 %													
16	2013	7.1 %	3.8 %													
17	2014	8.7 %	4.0 %													
18	2015	27.8 %	2.1 %													
19								5 marks			5 marks					
20	Average			5 marks												
21	Standard dev.			5 marks												
22	Covariance			5 marks												
23																
24																
25				Total 40 marks												
26													5 marks			
27																

QUESTION 3 (30 MARKS)

A stock's present price is RM100. Assume that this price will increase by 20 percent or drop by 10%. The risk-free interest rate is 2 per cent per quarter. Find today's value of a call option on the stock with an exercise price of RM90. The option expires after four quarters (i.e. one year). Using the template below to model:

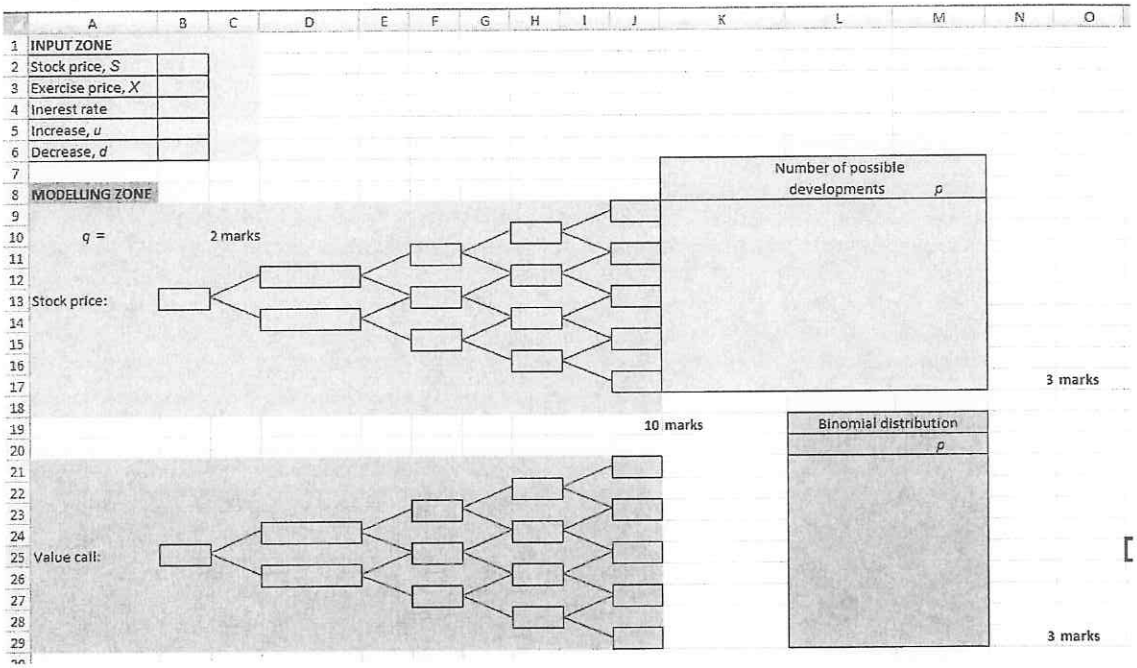
a. The risk-neutral probabilities of an up-move (q) and a down-move (1-q) in the stock price during a quarter. **(2 marks)**

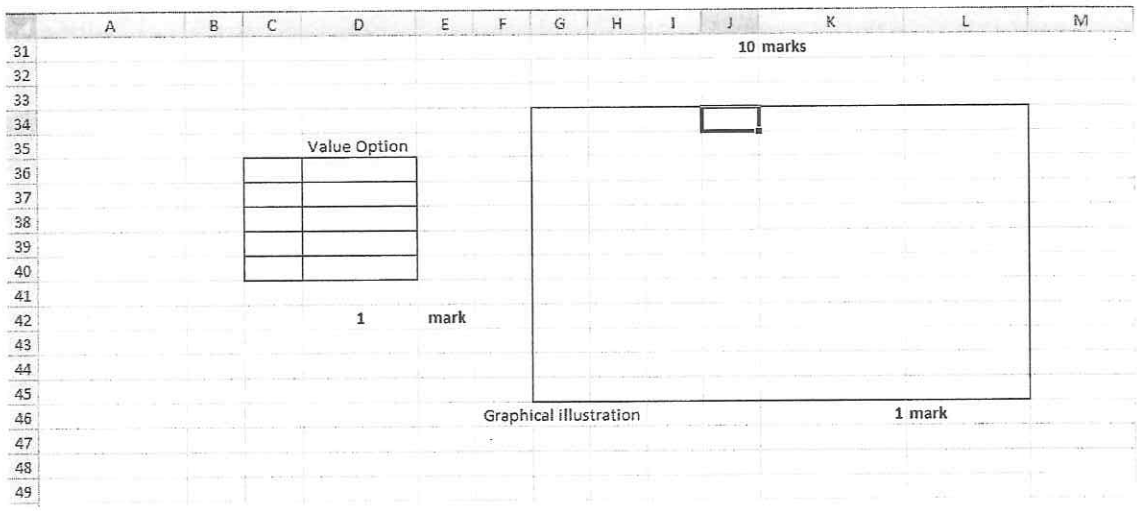
b. Compute possible stock prices for all the four quarters. List out number of possible developments and the corresponding prices.

(13 marks)

Continued...

c. Draw out the binomial distribution and value the call option. Provide graphical illustration. **(15 marks)**





End of Page

Name: Student ID: Answer for Question:

	A	B	C	D	E	F	G	H
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								

Name:

Student ID:

Answer for Question:

	A	B	C	D	E	F	G	H
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								
49								
50								
51								
52								
53								
54								
55								
56								
57								
58								
59								
60								
61								
62								

Name:

Student ID:

Answer for Question:

	I	J	K	L	M	N	O	P
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								

Name:

Student ID:

Answer for Question:

	I	J	K	L	M	N	O	P
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								
49								
50								
51								
52								
53								
54								
55								
56								
57								
58								
59								
60								
61								
62								